

**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION**

OYSTER OPTICS, LLC,

Plaintiff,

v.

CISCO SYSTEMS, INC.

Defendant.

Civil Action No. 2:20-cv-211

**JURY TRIAL DEMANDED**

**COMPLAINT FOR PATENT INFRINGEMENT**

This is an action for patent infringement arising under the Patent Laws of the United States of America, 35 U.S.C. § 1 *et seq.* in which Plaintiff Oyster Optics, LLC (“Oyster” or “Plaintiff”) makes the following allegations against Defendant Cisco Systems, Inc. (“Cisco” or “Defendant”).

**PARTIES**

1. Oyster Optics, LLC is a Texas company, and has a place of business at 11921 Freedom Drive, Suite 550, Reston, VA 20190.

2. On information and belief, Cisco is a California corporation with its principal place of business at 170 West Tasman Drive, San Jose, California 95134. Cisco can be served through its registered agent, Prentice Hall Corporation System, 211 E. 7<sup>th</sup> Street, Suite 620, Austin, TX 78701.

## **JURISDICTION AND VENUE**

3. This action arises under the patent laws of the United States, Title 35 of the United States Code. Accordingly, this Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a).

4. This Court has personal jurisdiction over Cisco in this action because, among other reasons, Cisco has committed acts within the Eastern District of Texas giving rise to this action and has established minimum contacts with the forum state of Texas. Cisco maintains several places of business within the State, including at 2250 East President George Bush Turnpike, Richardson, TX 75082. Cisco directly and/or through subsidiaries or intermediaries (including distributors, retailers, and others), has committed and continues to commit acts of infringement in this District by, among other things, making, using, importing, offering for sale, and/or selling products and/or services that infringe the patents-in-suit. Thus, Cisco purposefully availed itself of the benefits of doing business in the State of Texas and the exercise of jurisdiction over Cisco would not offend traditional notions of fair play and substantial justice. Cisco is registered to do business in the State of Texas, and has appointed Prentice Hall Corporation System, 211 E. 7<sup>th</sup> Street, Suite 620, Austin, TX 78701 as its agent for service of process.

5. Venue is proper in this District under 28 U.S.C. §§ 1391 (b)-(c) and 1400(b) because Cisco is subject to personal jurisdiction in this District, has transacted business in this District, and has committed acts of patent infringement in this District.

## **BACKGROUND**

6. In the early 2000s, Oyster Optics, Inc., a research, development, and engineering company, was focused upon innovation in government, commercial, security, and broad-band

applications of leading edge fiber optics technology. Mr. Peter (“Rocky”) Snawerdt was at Oyster Optics, Inc. when he invented the subject matter of U.S. Patent Nos. 6,665,500; 8,913,898; and 10,205,516 (collectively, “asserted patents” or “patents-in-suit”).

7. Oyster is the owner by assignment of United States Patent No. 6,665,500 (“the ’500 Patent”) entitled “Dual-Mode Fiber Optic Telecommunications System and Method.” The ’500 Patent was duly and legally issued by the United States Patent and Trademark Office on December 16, 2003. A true and correct copy of the ’500 Patent is included as Exhibit A.

8. Oyster is the owner by assignment of United States Patent No. 8,913,898 (“the ’898 Patent”) entitled “Fiber Optic Telecommunications Card with Energy Level Monitoring.” The ’898 Patent was duly and legally issued by the United States Patent and Trademark Office on December 16, 2014. A true and correct copy of the ’898 Patent is included as Exhibit B.

9. Oyster is the owner by assignment of United States Patent No. 10,205,516 (“the ’516 Patent”) entitled “Fiber Optic Telecommunications Card with Energy Level Monitoring.” The ’516 Patent was duly and legally issued by the United States Patent and Trademark Office on February 12, 2019. A true and correct copy of the ’516 Patent is included as Exhibit C.

10. Based on publicly available information, Oyster and its damages experts believe the infringement detailed below is pervasive—*totaling over \$500M in infringing and unlicensed revenue*. See, e.g., <https://cignal.ai/2018/09/compact-modular-optical-equipment-market-on-pace-to-break-1-billion-in-2018/>; see also, e.g., <https://newsroom.cisco.com/press-release-content?type=webcontent&articleId=2000889>.

## **COUNT I**

### **INFRINGEMENT OF THE '500 PATENT**

11. Oyster references and incorporates by reference paragraphs 1 through 10 of this Complaint.

12. On information and belief, Cisco makes, uses, offers to sell and/or sells in the United States products that infringe various claims of the '500 Patent, and continues to do so. These include without limitation (1) the NCS1K4 12x QSFP28 2 Trunk C-Band DWDM card and the NCS 1004 chassis in which it is used; (2) the CFP2-WDM-DET-1HL, CFP2-WDM-D-1HL CFP2-DCO modules; the NC55-MPA-1TH2H-S, NC55-MPA-2TH-S, NC55-MPA-2TH-HX-S, A9K-MPA-2X100GE, and A9K-MPA-1X200GE modular port adapters; and the NCS 5000 series 55A2 and ASR 9000 series chassis these devices are used in; and (3) ONS-CFP2-WDM CFP2-ACO module; the NCS 1000 (NCS1002-K9) chassis, the NCS2K-400G-XP and NCS2K-400GXP-L-K9 line cards for the NCS 2002, NCS 2006, and NCS 2015 chassis, the NCS4K-4H-OPW-QC2 line card for the NSC 4009 and NCS 4016 chassis, the NC55-6X200-DWDM-S, NC55-2H-DWDM-RTU, and NC55-6P-DWDM-RTU line cards for the NCS 5504, NCS 5508, and NCS 5516 chassis, and the A9K-400GE-DWDM-TR line card for the ASR 9006, ASR 9010, ASR 9904, ASR 9906, ASR 9910, ASR 9912, and ASR 9922 chassis. (collectively, "'500 Accused Instrumentalities").

13. On information and belief, the '500 Accused Instrumentalities contain an optical data transmitter. For example, the Cisco NCS 1004 1.2Tbps Line Card contains "two trunk ports operating any rate between 100G and 600G in 50G increments." Cisco NCS 1004 Data Sheet, <https://www.cisco.com/c/en/us/products/collateral/optical-networking/network-convergence->

system-1000-series/datasheet-c78-740368.html, at 1. The line card contains an optical data transmitter associated with each trunk port:



*Id.* at 2.

14. As another example, the Cisco CFP2-DCO pluggable optical modules contain an optical data transmitter:

**Figure 2.** Digital CFP2 Optical module



**Table 3.** Transmitter specifications

Product ID	Transmit Power Range (dBm)	Output out-of-band OSNR (dB @0.1nm)	Output in-band OSNR (dB @0.1nm)	Optical output return loss (dB)
<b>CFP2-WDM-DET-1HL=</b>	-10 to +1	45	100G QPSK: 37 200G 16QAM: 34.3 200G 8QAM: 32.3	27
<b>CFP2-WDM-D-1HL=</b>	-5 to +1 -10 to -5	25 20	100G QPSK: 37 200G 16QAM: 34.3 200G 8QAM: 32.3	27

Cisco Digital CFP2 Pluggable Optical Module Data Sheet, <https://www.cisco.com/c/en/us/products/collateral/routers/network-convergence-system-5500-series/datasheet-c78-741079.pdf>, at 2, 3.

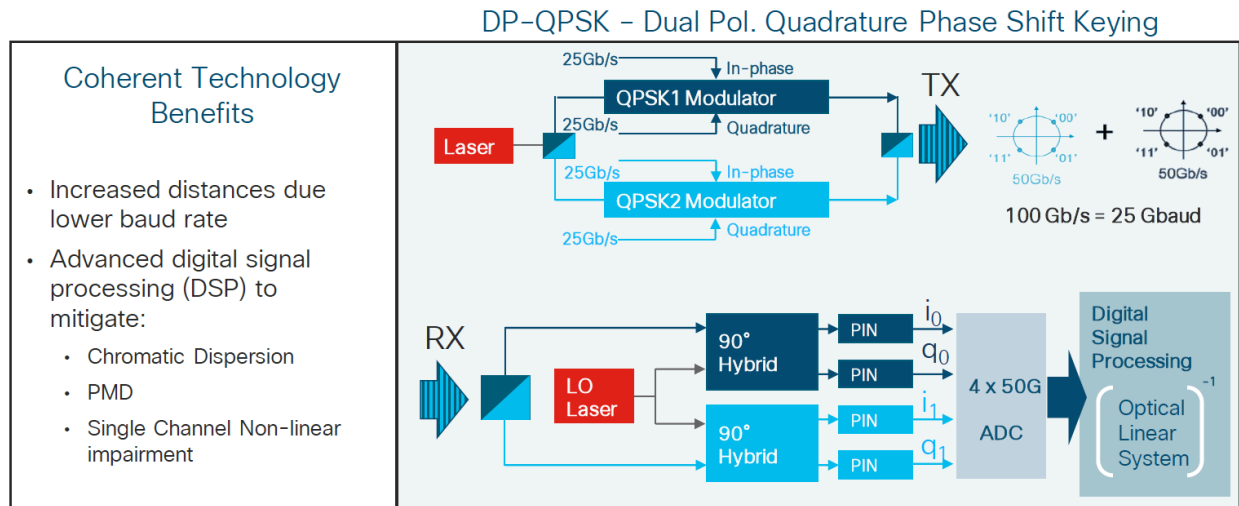
15. On information and belief, the optical data transmitter in the '500 Accused Instrumentalities comprises a laser. For example, Cisco NCS 1004 1.2Tbps Line Card contains a laser:

Optical Feature Summary
• 50GHz and flex-grid (0.1GHz) tunable lasers

Cisco NCS 1004 Data Sheet at 5.

16. As another example, on information and belief the Cisco CFP2-DCO pluggable optical modules as coherent optical modules contain a laser:

## Coherent optics for 100G and beyond



Cisco Live presentation, <https://www.ciscolive.com/c/dam/r/ciscolive/emea/docs/2019/pdf/BRKOPT-2002.pdf>, at 38.

17. On information and belief, the optical data transmitter in the '500 Accused Instrumentalities comprises a phase modulator for phase modulating light from the light source. For example, the Cisco NCS 1004 1.2Tbps Line Card contains a phase modulator for modulating light in the BPSK and QPSK modulation formats:

Optical Transmitter	
Type	PM-BPSK modulation format PM-QPSK modulation format

Cisco NCS 1004 Data Sheet at 7.

18. As another example, the Cisco CFP2-DCO modules contain a phase modulator for modulating light in the QPSK modulation format:

- The line rate and modulation scheme associated with the same are both software settable on the pluggable. One could choose between 100G QPSK, 200G 8-QAM, 200G 16-QAM on the same pluggable module by software actuation. This allows one to adopt different reach as required.
  - QPSK schemes could offer up to 2000km of reach on standard G.652 Single mode fiber.
  - 16-QAM schemes could offer up to 400km of reach on standard G.652 Single mode fiber.

Cisco Digital CFP2 Pluggable Optical Module Data Sheet at 2.

19. On information and belief, the optical data transmitter in the '500 Accused Instrumentalities comprises a controller having an input for receiving electronic data. For example, in the Cisco NCS 1004 1.2Tbps Line Card each trunk port receives electronic data at “any rate between 100G and 600G in 50G increments.” Cisco NCS 1004 Data Sheet at 1.

20. As another example, the Cisco CFP2-DCO modules receive electronic data at a rate of 100G or 200G:

- The line rate and modulation scheme associated with the same are both software settable on the pluggable. One could choose between 100G QPSK, 200G 8-QAM, 200G 16-QAM on the same pluggable module by software actuation. This allows one to adopt different reach as required.

Cisco Digital CFP2 Pluggable Optical Module Data Sheet at 2.

21. On information and belief, in the optical data transmitter in the '500 Accused Instrumentalities the controller in a first mode controls the phase modulator so as to create phase-modulated optical signals in the light from the laser as a function of the electronic data stream. For example, in a first mode the Cisco NCS 1004 1.2Tbps Line Card creates BPSK or QPSK optical signals as a function of the electronic data stream:

- The modulation format can be controlled between BPSK, QPSK, 8-QAM, 16QAM, 32QAM and 64QAM.

Cisco NCS 1004 Data Sheet at 1.

22. As another example, in a first mode the Cisco CFP2-DCO modules create QPSK optical signals as a function of the electronic data stream:

- The line rate and modulation scheme associated with the same are both software settable on the pluggable. One could choose between 100G QPSK, 200G 8-QAM, 200G 16-QAM on the same pluggable module by software actuation. This allows one to adopt different reach as required.

Cisco Digital CFP2 Pluggable Optical Module Data Sheet at 2.

23. On information and belief, in the optical data transmitter in the '500 Accused Instrumentalities the controller in a second alternate mode amplitude-modulates the light from the laser as a function of the electronic data stream. For example, in a second mode the Cisco NCS 1004 1.2Tbps Line Card creates 8-QAM, 16QAM, 32QAM or 64 QAM optical signals as a function of the electronic data stream:

- The modulation format can be controlled between BPSK, QPSK, 8-QAM, 16QAM, 32QAM and 64QAM.

Cisco NCS 1004 Data Sheet at 1.

24. As another example, in a second mode the Cisco CFP2-DCO modules create 8-QAM or 16-QAM optical signals as a function of the electronic data stream:

- The line rate and modulation scheme associated with the same are both software settable on the pluggable. One could choose between 100G QPSK, 200G 8-QAM, 200G 16-QAM on the same pluggable module by software actuation. This allows one to adopt different reach as required.

Cisco Digital CFP2 Pluggable Optical Module Data Sheet at 2.

25. On information and belief, in the optical data transmitter in the '500 Accused Instrumentalities the first mode and the second mode occur at different times. For example, in the Cisco NCS 1004 1.2Tbps Line Card PSK and QAM modulation modes occur at different times:



- The modulation format can be controlled between BPSK, QPSK, 8-QAM, 16QAM, 32QAM and 64QAM.

Cisco NCS 1004 Data Sheet at 1.

26. As another example, in the Cisco CFP2-DCO modules PSK and QAM modulation modes occur at different times:

- The line rate and modulation scheme associated with the same are both software settable on the pluggable. One could choose between 100G QPSK, 200G 8-QAM, 200G 16-QAM on the same pluggable module by software actuation. This allows one to adopt different reach as required.

Cisco Digital CFP2 Pluggable Optical Module Data Sheet at 2.

27. On information and belief, Cisco has directly infringed and continues to directly infringe the '500 Patent by, among other things, making, using, offering for sale, and/or selling the '500 Accused Instrumentalities. On information and belief, such products and/or services are covered by one or more claims of the '500 Patent including at least claim 1.

28. By making, using, offering for sale, and/or selling the '500 Accused Instrumentalities infringing the '500 Patent, Cisco has injured Oyster and is liable to Oyster for infringement of the '500 Patent pursuant to 35 U.S.C. § 271(a) directly and/or under the doctrine of equivalents.

29. In addition, Cisco actively induces others, including without limitation customers and end users of '500 Accused Instrumentalities, services based thereupon, and related products and/or processes, to directly infringe each claim limitation, including without limitation claim 1 of the '500 Patent, in violation of 35 U.S.C. § 271(b). Upon information and belief, Cisco's customers and/or end users have directly infringed and are directly infringing each claim limitation, including without limitation claim 1 of the '500 Patent. Cisco has actual knowledge of the '500 Patent at least as of service of this Complaint. Cisco is knowingly inducing its customers and/or end users to directly infringe the '500 Patent, with the specific intent to

encourage such infringement, and knowing that the induced acts constitute patent infringement. Cisco's inducement includes, for example, providing technical guides, product data sheets, demonstrations, software and hardware specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '500 Patent.

30. To the extent facts learned in discovery show that Cisco's infringement of the '500 Patent is or has been willful, Oyster reserves the right to request such a finding at time of trial.

31. As a result of Cisco's infringement of the '500 Patent, Oyster has suffered monetary damages in an amount adequate to compensate for Cisco's infringement, but in no event less than a reasonable royalty for the use made of the invention by Cisco, together with interest and costs as fixed by the Court.

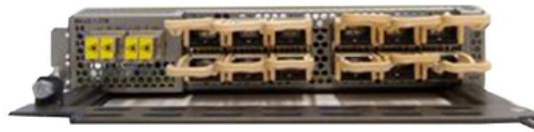
## **COUNT II**

### **INFRINGEMENT OF THE '898 PATENT**

32. Oyster references and incorporates by reference paragraphs 1 through 31 of this Complaint.

33. On information and belief, Cisco makes, uses, offers to sell and/or sells in the United States products that infringe various claims of the '898 Patent, and continues to do so. These include without limitation (1) the NCS1K4 12x QSFP28 2 Trunk C-Band DWDM card and the NCS 1004 chassis in which it is used and (2) the CFP2-WDM-DS100-HL, CFP2-WDM-DET-1HL, CFP2-WDM-D-1HL CFP2-DCO modules; the NC55-MPA-1TH2H-S, NC55-MPA-2TH-S, NC55-MPA-2TH-HX-S, A9K-MPA-1X100GE, A9K-MPA-2X100GE, and A9K-MPA-1X200GE modular port adapters; and the NCS 5000 series 55A2 and ASR 9000 series chassis these devices are used in. (collectively, "'898 Accused Instrumentalities").

34. On information and belief, the '898 Accused Instrumentalities are and/or contain a transceiver card for a telecommunications box for transmitting data over a first optical fiber and receiving data over a second optical fiber. For example, each trunk port of the Cisco NCS 1004 1.2Tbps Line Card connects to two optical fibers and transmits data over the first fiber and receives data over the second fiber:



Cisco NCS 1004 Data Sheet at 2.

35. As another example, the Cisco CFP2-DCO modules connect to two optical fibers and transmit data over the first fiber and receive data over the second fiber:

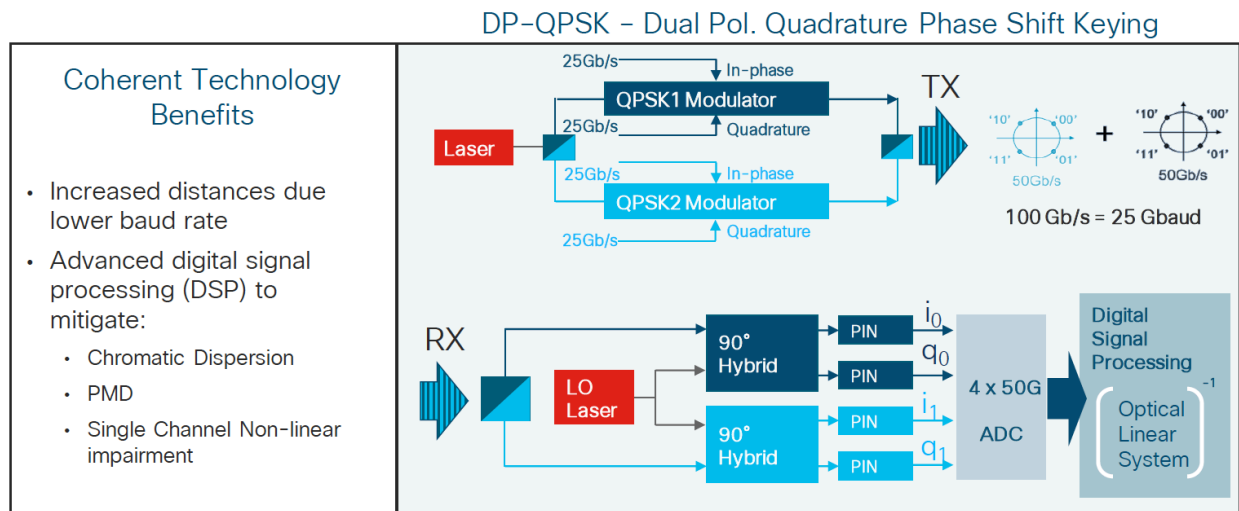
**Figure 2.** Digital CFP2 Optical module



Cisco Digital CFP2 Pluggable Optical Module Data Sheet at 2.

36. On information and belief, the '898 Accused Instrumentalities comprise a transmitter having a laser, a modulator, and a controller configured to receive input data and control the modulator to generate a first optical signal as a function of the input data. For example, the Accused Instrumentalities, on information and belief, contain coherent optics similar to those described in the following Cisco presentation slide:

# Coherent optics for 100G and beyond



Cisco Live presentation, <https://www.ciscolive.com/c/dam/r/ciscolive/emea/docs/2019/pdf/BRKOPT-2002.pdf>, at 38.

37. As shown in this slide, the transmitter has a laser and modulators. The modulators are controlled by a controller configured to receive input data and control the modulators to generate a first optical signal as a function of that input data.

38. On information and belief, the '898 Accused Instrumentalities comprise a fiber output optically connected to the transmitter and configured to optically connect the first optical fiber to the transceiver card. For example, each trunk port of the Cisco NCS 1004 1.2Tbps Line Card has a fiber output optically connected to the transmitter and configured to optically connect the first optical fiber to the transceiver card:



Cisco NCS 1004 Data Sheet at 2.

39. As another example, the Cisco CFP2-DCO modules has a fiber output optically connected to the transmitter and configured to optically connect the first optical fiber to the transceiver card:

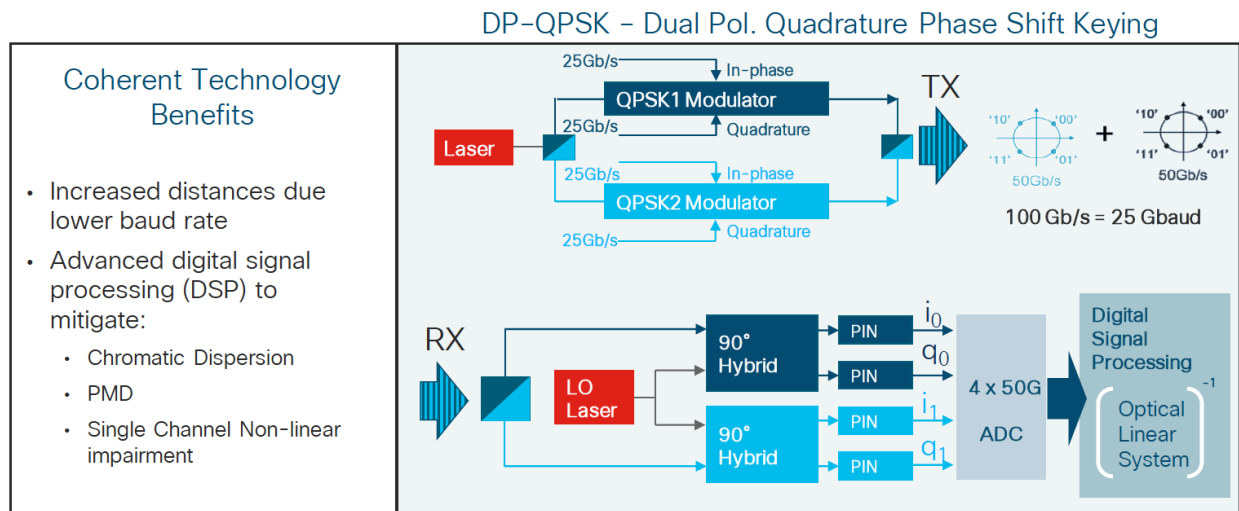
**Figure 2.** Digital CFP2 Optical module



Cisco Digital CFP2 Pluggable Optical Module Data Sheet at 2.

40. On information and belief, the '898 Accused Instrumentalities comprise a receiver configured to receive a second optical signal from the second optical fiber and to convert the second optical signal to output data. For example, the Accused Instrumentalities, on information and belief, contain coherent optics similar to those described in the following Cisco presentation slide:

# Coherent optics for 100G and beyond



Cisco Live presentation, <https://www.ciscolive.com/c/dam/r/ciscolive/emea/docs/2019/pdf/BRKOPT-2002.pdf>, at 38.

41. As shown in this slide, the receiver is configured to receive a second optical signal from the second optical fiber and to convert the second optical signal to output data.

42. On information and belief, the '898 Accused Instrumentalities comprise a fiber input optically connected to the receiver and configured to optically connect the second optical fiber to the transceiver card. For example,

43. On information and belief, the '898 Accused Instrumentalities comprise a fiber output optically connected to the transmitter and configured to optically connect the first optical fiber to the transceiver card. For example, each trunk port of the Cisco NCS 1004 1.2Tbps Line Card has a fiber input optically connected to the receiver and configured to optically connect the second optical fiber to the transceiver card:



Cisco NCS 1004 Data Sheet at 2.

44. As another example, the Cisco CFP2-DCO modules has a fiber input optically connected to the receiver and configured to optically connect the second optical fiber to the transceiver card:

**Figure 2.** Digital CFP2 Optical module



Cisco Digital CFP2 Pluggable Optical Module Data Sheet at 2.

45. On information and belief, the '898 Accused Instrumentalities comprise an energy level detector configured to measure an energy level of the second optical signal, the energy level detector including a threshold indicating a drop in amplitude of the second optical signal. For example, on information and belief the Cisco NCS 1004 1.2Tbps Line Card detects a Loss of Signal based upon the amplitude of the received optical signal dropping below a threshold:

**OTN feature summary**

- Alarm reporting for Loss of Signal (LOS), Loss of Frame (LOF), Loss of Multi-frame (LOM), Alarm Indication Signal (AIS), Backward Defect Indicator (BDI)
- OTUk, ODUk, OPUk Performance Monitoring
- Threshold Crossing Alerts (TCAs)

Cisco NCS 1004 Data Sheet at 5.

46. As another example, the Cisco CFP2-DCO modules contain a signal pin named “RX\_LOS” which outputs a “1” when the received optical signal is low. On information and belief, this RX\_LOS signal is produced based upon the amplitude of the received optical signal dropping below a threshold:

25	RX_LOS	0	LVC MOS	Receiver Loss of Optical Signal, "1": low optical signal, "0": normal condition
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Implementation Agreement for CFP2-Digital Coherent Optics Module, IA # OIF-CFP2-DCO-01.0, <https://www.oiforum.com/wp-content/uploads/2019/01/OIF-CFP2-DCO-01.0.pdf> (“CFP2-DCO IA”), at 20.

**2.4.3 Receiver Loss of Signal Pin**

The Receiver Loss of Signal Pin (RX\_LOS) is an output pin to the Host, operating with active-high logic. When asserted, it indicates received optical power in the CFP module is lower than the expected value. The optical power at which RX\_LOS is asserted may be specified by other governing documents and the CFP module vendor as the alarm threshold level is application specific. The RX\_LOS is the logic OR of the LOS signals from all the input receiving channels in a CFP module.

CFP MSA Hardware Specification, Revision 1.4, <http://www.cfp-msa.org/Documents/CFP-MSA-HW-Spec-rev1-40.pdf>, at 14.

47. On information and belief, Cisco has directly infringed and continue to directly infringe the '898 Patent by, among other things, making, using, offering for sale, and/or selling the '898 Accused Instrumentalities. On information and belief, such products and/or services are covered by one or more claims of the '898 Patent, including at least claim 14.

48. By making, using, offering for sale, and/or selling the '898 Accused Instrumentalities infringing the '898 Patent, Cisco has injured Oyster and is liable to Oyster for infringement of the '898 Patent pursuant to 35 U.S.C. § 271(a) directly and/or under the doctrine of equivalents.

49. In addition, Cisco actively induces others, including without limitation customers and end users of '898 Accused Instrumentalities, to directly infringe each claim limitation, including without limitation claim 14 of the '898 Patent, in violation of 35 U.S.C. § 271(b). Upon information and belief, Cisco's customers and/or end users have directly infringed and are directly infringing each claim limitation, including without limitation claim 14 of the '898



Patent. Cisco has had actual knowledge of the '898 Patent at least as of December 2, 2016 when Cisco was served with a complaint alleging infringement of the '898 Patent in Case No. 2:16-cv-01301-JRG (E.D. Texas). Cisco is knowingly inducing its customers and/or end users to directly infringe the '898 Patent, with the specific intent to encourage such infringement, and knowing that the induced acts constitute patent infringement. Cisco's inducement includes, for example, providing technical guides, product data sheets, demonstrations, software and hardware specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '898 Patent.

50. On February 26, 2019, the Patent Trial and Appeal Board ("PTAB") issued its final written decision in *Cisco Systems, Inc. v. Oyster Optics, LLC*, Case IPR2017-01881, affirming the patentability of claims of the '898 patent that Cisco had challenged. Since at least December 2, 2016, Cisco's infringement of the '898 patent has been, and continues to be, willful and egregious. Since at least February 26, 2019, Cisco's infringement has been made more egregious by its knowledge that the PTAB had rejected its invalidity arguments and that it was estopped from arguing that the '898 patent was invalid as a result of patent or printed publication prior art.

51. As a result of Cisco's infringement of the '898 Patent, Oyster has suffered monetary damages in an amount adequate to compensate for Cisco's infringement, but in no event less than a reasonable royalty for the use made of the invention by Cisco, together with interest and costs as fixed by the Court.

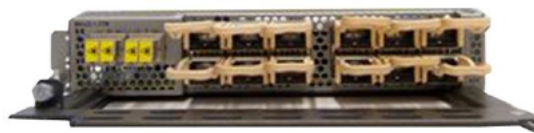
### **COUNT III**

#### **INFRINGEMENT OF THE '516 PATENT**

52. Oyster references and incorporates by reference paragraphs 1 through 51 of this Complaint.

53. On information and belief, Cisco makes, uses, offers to sell and/or sells in the United States products that infringe various claims of the '516 Patent, and continues to do so. These include without limitation (1) the NCS1K4 12x QSFP28 2 Trunk C-Band DWDM card and the NCS 1004 chassis in which it is used; (2) the CFP2-WDM-DS100-HL, CFP2-WDM-DET-1HL, CFP2-WDM-D-1HL CFP2-DCO modules; the NC55-MPA-1TH2H-S, NC55-MPA-2TH-S, NC55-MPA-2TH-HX-S, A9K-MPA-1X100GE, A9K-MPA-2X100GE, and A9K-MPA-1X200GE modular port adapters; and the NCS 5000 series 55A2 and ASR 9000 series chassis these devices are used in; and (3) ONS-CFP2-WDM CFP2-ACO module; the NCS 1000 (NCS1002-K9) chassis, the NCS2K-400G-XP and NCS2K-400GXP-L-K9 line cards for the NCS 2002, NCS 2006, and NCS 2015 chassis, the NCS4K-4H-OPW-QC2 line card for the NSC 4009 and NCS 4016 chassis, the NC55-6X200-DWDM-S, NC55-2H-DWDM-RTU, and NC55-6P-DWDM-RTU line cards for the NCS 5504, NCS 5508, and NCS 5516 chassis, and the A9K-400GE-DWDM-TR line card for the ASR 9006, ASR 9010, ASR 9904, ASR 9906, ASR 9910, ASR 9912, and ASR 9922 chassis. (collectively, "'516 Accused Instrumentalities").

54. On information and belief, the '516 Accused Instrumentalities are and/or contain a telecommunications apparatus. For example, the Cisco NCS 1004 1.2Tbps Line Card is a telecommunications apparatus:



Cisco NCS 1004 Data Sheet at 2.

55. As another example, the Cisco CFP2-DCO module is a telecommunications apparatus:

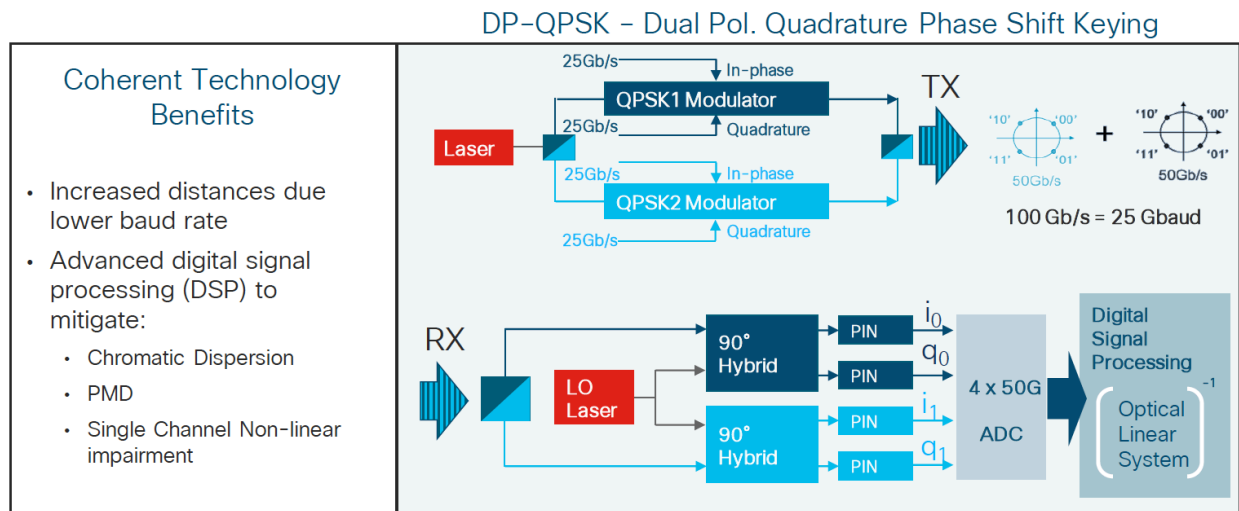
**Figure 2.** Digital CFP2 Optical module



Cisco Digital CFP2 Pluggable Optical Module Data Sheet at 2.

56. On information and belief, the '516 Accused Instrumentalities comprise an optical receiver affixed to a printed circuit board and configured to receive an optical data signal from an optical fiber of an optical fiber telecommunications system. For example, the Accused Instrumentalities, on information and belief, contain coherent optics similar to those described in the following Cisco presentation slide:

# Coherent optics for 100G and beyond



Cisco Live presentation, <https://www.ciscolive.com/c/dam/r/ciscolive/emea/docs/2019/pdf/BRKOPT-2002.pdf>, at 38.

57. As shown in this slide, the optical receiver is configured to receive an optical data signal from an optical fiber of an optical fiber telecommunications system.

58. On information and belief, the '516 Accused Instrumentalities comprise an energy level detector circuit, optically coupled to the optical fiber upstream from the optical receiver, wherein the energy level detector circuit is configured to monitor an energy level of the optical data signal and generate an alarm based on the energy level and one or more energy level thresholds. For example, on information and belief the Cisco NCS 1004 1.2Tbps Line Card monitors an energy level of the optical data signal and generates an alarm based on the energy level and one or more energy level thresholds:

## OTN feature summary

- Alarm reporting for Loss of Signal (LOS), Loss of Frame (LOF), Loss of Multi-frame (LOM), Alarm Indication Signal (AIS), Backward Defect Indicator (BDI)
- OTUk, ODUk, OPUk Performance Monitoring
- Threshold Crossing Alerts (TCAs)

Cisco NCS 1004 Data Sheet at 5.

59. As another example, the Cisco CFP2-DCO modules contain a signal pin named “RX\_LOS” which outputs a “1” when the received optical signal is low. On information and belief, this RX\_LOS signal is produced based upon monitoring an energy level of the optical data signal and generating an alarm based on the energy level and one or more energy level thresholds:

25	RX_LOS	0	LVC MOS	Receiver Loss of Optical Signal, "1": low optical signal, "0": normal condition
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Implementation Agreement for CFP2-Digital Coherent Optics Module, IA # OIF-CFP2-DCO-01.0, <https://www.oiforum.com/wp-content/uploads/2019/01/OIF-CFP2-DCO-01.0.pdf> (“CFP2-DCO IA”), at 20.

#### **2.4.3 Receiver Loss of Signal Pin**

The Receiver Loss of Signal Pin (RX\_LOS) is an output pin to the Host, operating with active-high logic. When asserted, it indicates received optical power in the CFP module is lower than the expected value. The optical power at which RX\_LOS is asserted may be specified by other governing documents and the CFP module vendor as the alarm threshold level is application specific. The RX\_LOS is the logic OR of the LOS signals from all the input receiving channels in a CFP module.

CFP MSA Hardware Specification, Revision 1.4, <http://www.cfp-msa.org/Documents/CFP-MSA-HW-Spec-rev1-40.pdf>, at 14.

60. On information and belief, the energy level detector circuit in the ’516 Accused Instrumentalities includes a photodetector to generate a photodetector voltage indicative of an energy level of the optical data signal and includes one or more comparators corresponding to the one or more energy level thresholds, wherein each of the one or more comparators: includes a first input coupled to an output voltage indicative of the photodetector voltage; includes a second input coupled to a corresponding reference voltage; and generates a comparator signal indicative of a comparison between the corresponding reference voltage and the output voltage.

61. On information and belief, Cisco has directly infringed and continues to directly infringe the '516 Patent by, among other things, making, using, offering for sale, and/or selling the '516 Accused Instrumentalities. On information and belief, such products and/or services are covered by one or more claims of the '516 Patent including at least claim 1.

62. By making, using, offering for sale, and/or selling the '516 Accused Instrumentalities infringing the '516 Patent, Cisco has injured Oyster and is liable to Oyster for infringement of the '516 Patent pursuant to 35 U.S.C. § 271(a) directly and/or under the doctrine of equivalents.

63. In addition, Cisco is actively inducing others, such as its customers and end users of '516 Accused Instrumentalities, services based thereupon, and related products and/or processes, to directly infringe each claim limitation, including without limitation claim 1 of the '516 Patent, in violation of 35 U.S.C. § 271(b). Upon information and belief, Cisco's customers and/or end users have directly infringed and are directly infringing each claim limitation, including without limitation claim 1 of the '516 Patent. Cisco has actual knowledge of the '516 Patent at least as of service of this Complaint. Cisco is knowingly inducing its customers and/or end users to directly infringe the '516 Patent, with the specific intent to encourage such infringement, and knowing that the induced acts constitute patent infringement. Cisco's inducement includes, for example, providing technical guides, product data sheets, demonstrations, software and hardware specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '516 Patent.

64. To the extent facts learned in discovery show that Cisco's infringement of the '516 Patent is or has been willful, Oyster reserves the right to request such a finding at time of trial.

65. As a result of Cisco's infringement of the '516 Patent, Oyster has suffered monetary damages in an amount adequate to compensate for Cisco's infringement, but in no event less than a reasonable royalty for the use made of the invention by Cisco, together with interest and costs as fixed by the Court.

**PRAYER FOR RELIEF**

Plaintiff respectfully requests the following relief from this Court:

- A. A judgment that Cisco has infringed one or more claims of the '500, '898, and/or '516 Patents;
- B. A judgment and order requiring Cisco to pay Oyster its damages, costs, expenses, and prejudgment and post-judgment interest for Cisco's acts of infringement in accordance with 35 U.S.C. § 284;
- C. A judgment and order requiring Cisco to provide accountings and to pay supplemental damages to Oyster, including, without limitation, prejudgment and post-judgment interest;
- D. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Oyster its reasonable attorneys' fees against Cisco; and
- E. Any and all other relief to which Oyster may show itself to be entitled.

**JURY TRIAL DEMANDED**

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Oyster requests a trial by jury of any issues so triable by right.

Dated: June 18, 2020

Respectfully submitted,

/s/ Marc A. Fenster

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